



Pre-Permitting Environmental / Socio-Economic Data Report Series

Report Series F- Groundwater & Surface Water Quality

Report F-6 Transportation Corridor – Groundwater 2004-2006

Submitted to the Alaska Department of Natural Resources December 2008

Preliminary data. Do not cite or quote.

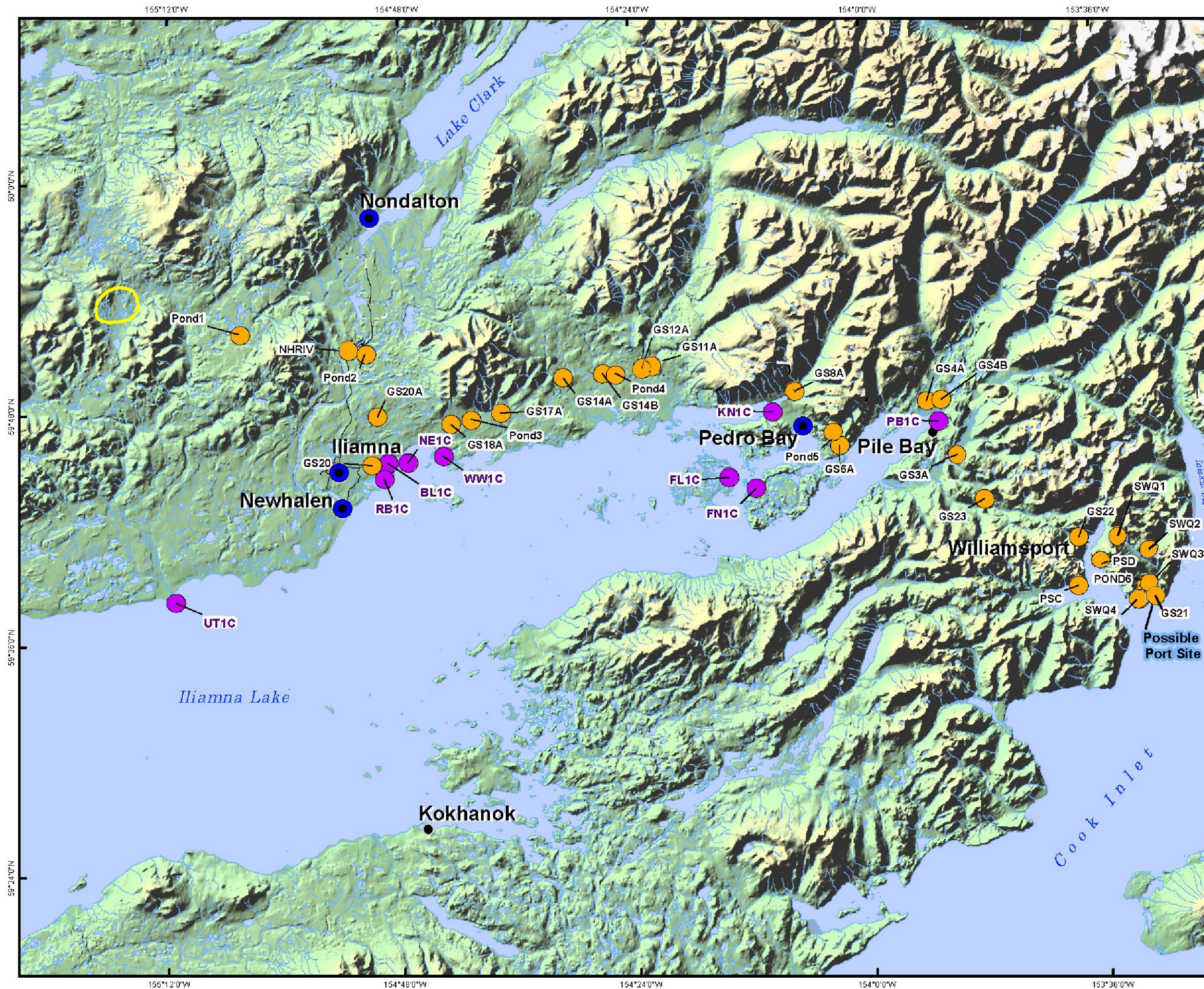
The Pebble Partnership is providing environmental and socio-economic baseline data collected to inform the development of the Pebble Project to state and federal agencies, project stakeholders and the general public prior to project permitting as part of its commitment to full and open disclosure.

A comprehensive Environmental Baseline Document (EBD) will subsequently be prepared and appended to future project permit applications. The EBD will also be made publicly available when complete.



Study conducted for the Pebble Limited Partnership by:

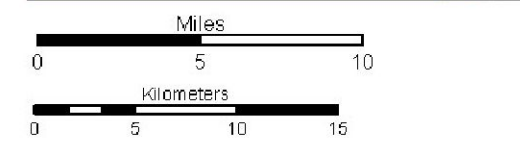
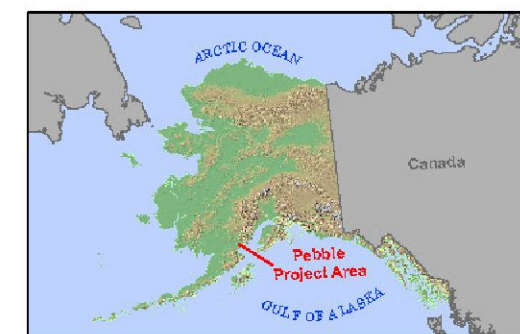
Bristol Environmental & Engineering Services Corporation
111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99502



2004 - 2007
 Transportation Corridor and
 Lake Iliamna Study
 Water Sample Locations

Legend

- Transportation Corridor Surface Water Location
- Transportation Corridor Groundwater Location
- Iliamna Lake Study Sample Location
- Communities
- General Deposit Location



Scale 1:375,000

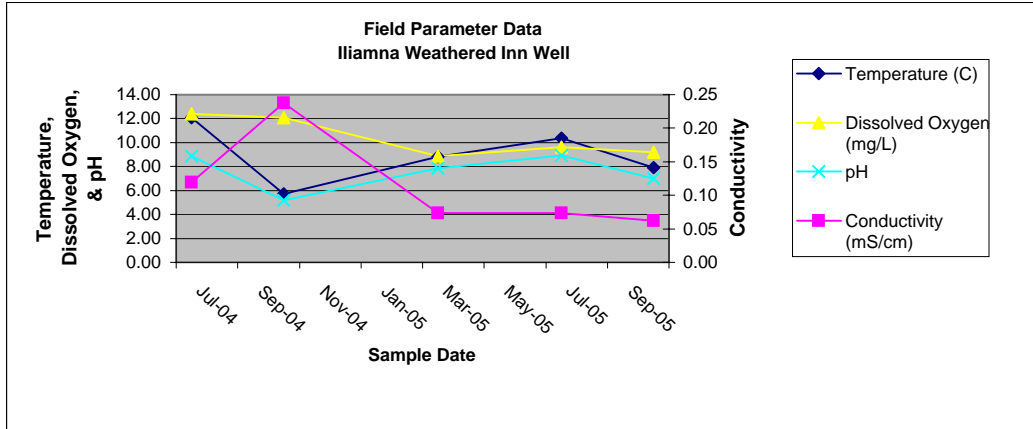
Alaska State Plane Zone 5 (units feet)
 1983 North American Datum

Transportation Corridor Groundwater

Tables and graphs of field parameter data from community wells for the Transportation Corridor within the Bristol Bay drainage.

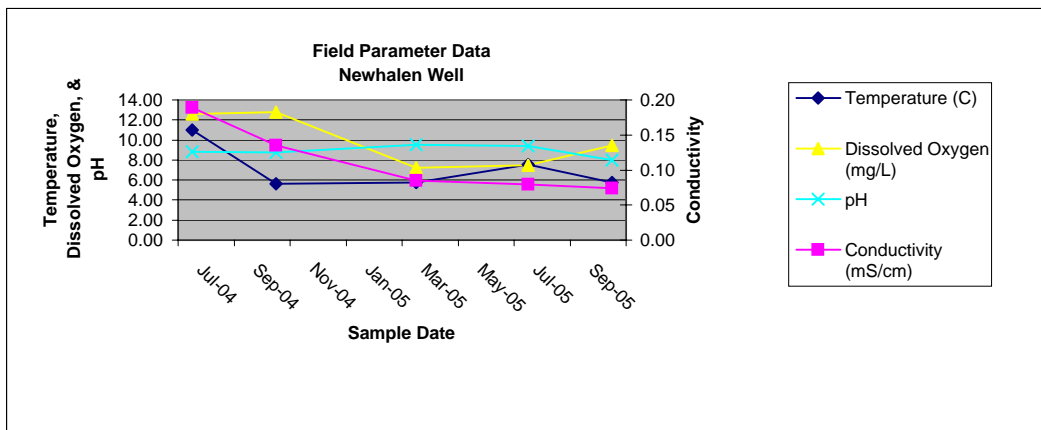
Iliamna Weathered Inn Well

Date	Temperature (C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH
Jul-04	12.10	0.12	12.40	8.86
Oct-04	5.70	0.24	12.10	5.17
Mar-05	8.83	0.07	8.88	7.83
Jul-05	10.36	0.07	9.61	8.90
Oct-05	7.89	0.06	9.18	7.00



Newhalen Public Well #2

Date	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH
Jul-04	11.00	0.19	12.60	8.83
Oct-04	5.60	0.14	12.80	8.76
Mar-05	5.78	0.09	7.21	9.51
Jul-05	7.54	0.08	7.45	9.39
Oct-05	5.76	0.07	9.44	8.00

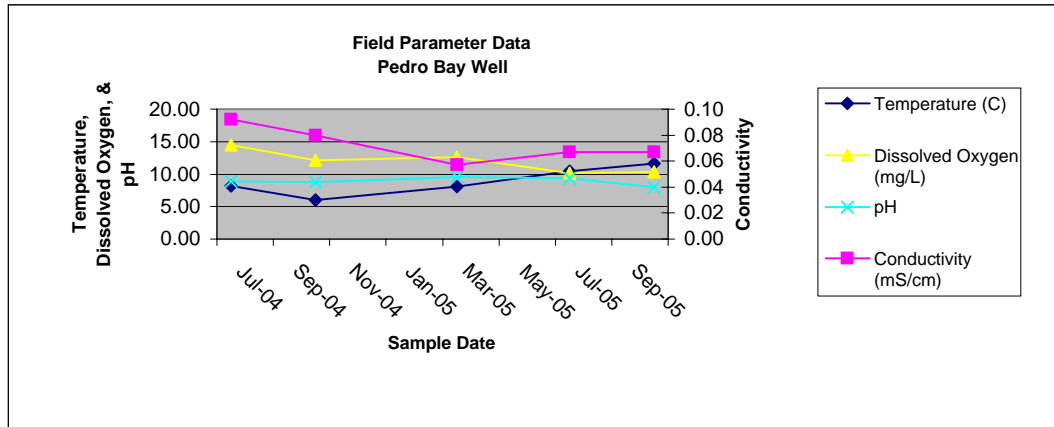


Transportation Corridor Groundwater

Tables and graphs of field parameter data from community wells for the Transportation Corridor within the Bristol Bay drainage.

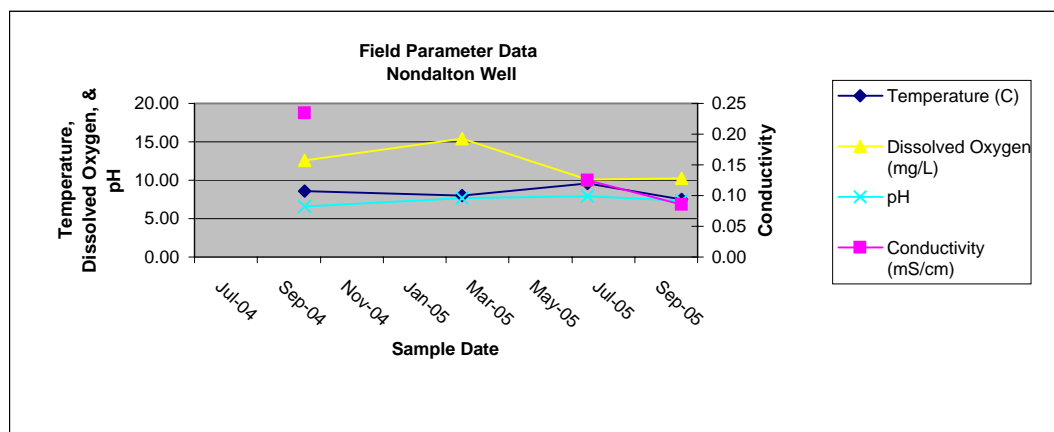
Pedro Bay Tribal Council Well

Date	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH
Jul-04	8.20	0.09	14.49	6.18
Oct-04	6.00	0.08	12.10	6.60
Mar-05	8.08	0.06	12.62	7.40
Jul-05	10.49	0.07	10.16	8.97
Oct-05	11.60	0.07	10.30	5.70



Nondalton City Well

Date	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH
Jul-04				
Oct-04	8.60	0.23	12.60	6.62
Mar-05	8.00		15.40	7.70
Jul-05	9.57	0.13	10.08	7.93
Oct-05	7.46	0.09	10.28	7.30



2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Hardness	Conductivity	Total Dissolved Solids	Total Suspended Solids	Acidity	Alkalinity	Nitrate & Nitrite	Phosphorus	Chloride	Fluoride	Sulfate	Total Cyanide	WAD Cyanide	Thiocyanate	Ammonia
		mg/L	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Iliamna (Weathered Inn)																
	07/21/04	32.8	100	77.5	0.25	1.57	44	0.67	0.0155	1.16	0.071	2.16	0.00125	0.00125	0.065	0.0155
	10/20/04	34.3	100	61.3	0.2	1.57	45	0.31	0.0155	1.27	0.05	2.05	0.0028	0.00125	0.18	0.0155
	03/29/05	39.3	90	65	0.3	0.785	45	0.25	0.0986	1.12	0.048	1.95	0.00125	0.00125	0.19	0.0155
	07/12/05	39.3	95	57.5	0.2	0.785	46	0.335	0.107	1.06	0.05	1.75	0.00125	0.00125	0.099	0.0155
	10/05/05	39.2	95	51.3	1	0.785	45	0.308	0.03	1.07	0.05	1.98	0.00125	0.00125	0.26	0.05
	Mean	37.0	96	62.5	0.4	1.10	45	0.375	0.0533	1.14	0.054	1.98	0.00156	0.00125	0.16	0.0224
	St. Deviation	3.2	4	9.8	0.3	0.43	0.7	0.168	0.0457	0.09	0.010	0.15	0.00069	0.00000	0.08	0.0154
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	32.8	90	51.3	0.2	0.79	44	0.25	0.0155	1.06	0.048	1.75	0.00125	0.00125	0.065	0.0155
	Maximum	39.3	100	77.5	1	1.57	46	0.67	0.107	1.27	0.071	2.16	0.0028	0.00125	0.26	0.05
	% of values undetected				20	100		20	40		60	0	80	100	20	100
	# of values between MDL and PQL				3			1			2		1		4	
Newhalen																
	07/21/04	8.28	122	76.3	1.29	1.57	48.5		0.0155	2.63	0.296	5.95	0.00125	0.00125	0.065	0.0155
	10/20/04	12	120	92.5	0.7	1.57	47	0.38	0.0155	3.07	0.136	5.12	0.0059	0.00125	0.0295	0.0155
	03/29/05	9.37	115	77.5	0.075	0.785	49	0.14	0.0998	2.54	0.29	6.02	0.0066	0.003	0.22	0.05
	07/16/05	9.37	120	77.5	0.4	0.785	50	0.189	0.108	2.49	0.245	5.43	0.00125	0.00125	0.26	0.0155
	10/08/05	73.3	180	101	0.075	5	85.5	0.548	0.041	1.38	0.19	7.74	0.00125	0.0034	0.21	0.0155
	Mean	22.46	131	85.0	0.5	1.94	56	0.314	0.0560	2.42	0.231	6.05	0.00325	0.00203	0.16	0.0224
	St. Deviation	28.45	27	11.2	0.5	1.75	17	0.187	0.0451	0.63	0.068	1.01	0.00275	0.00108	0.10	0.0154
	# of values	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5
	Minimum	8.28	115	76.3	0.075	0.785	47	0.14	0.0155	1.38	0.136	5.12	0.00125	0.00125	0.0295	0.0155
	Maximum	73.3	180	101	1.29	5	85.5	0.548	0.108	3.07	0.296	7.74	0.0066	0.0034	0.26	0.05
	% of values undetected				40	80			40				60	60	40	100
	# of values between MDL and PQL				1			1						2	3	

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Aluminum		Antimony		Arsenic		Barium		Beryllium		Bismuth		Boron		Cadmium		Dissolved
		Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	
Iliamna (Weathered Inn)																		
	07/21/04	12.5	12.5	0.0385	0.1	2.71	2.62	0.107	0.256	0.0075	0.0075	0.75	0.75	1.55	1.55	0.05	0.05	11300
	10/20/04	12.5	12.5	0.0385	0.0385	2.47	2.56	0.15	0.15	0.0075	0.0075	0.75	0.75	1.55	1.55	0.0155	0.0155	12200
	03/29/05	4.19	4.65	0.0679	0.0581	2.99	2.88	0.143	0.147	0.001495	0.0015	0.003835	0.00384	3.34	3.46	0.00310	0.00310	11800
	07/12/05	5.76	6.32	0.0836	0.0798	2.82	2.95	0.1	0.1	0.0075	0.0075	0.00155	0.00155	7.6	4.4	0.00775	0.025	12900
	10/05/05	7.9	6.16	0.053	0.0598	2.64	2.62	0.115	0.138	0.0075	0.0075	0.005	0.005	1.55	1.55	0.00775	0.00775	13500
	Mean	8.6	8.43	0.0563	0.0672	2.73	2.73	0.12	0.16	0.0063	0.0063	0.30	0.30	3.12	2.50	0.0168	0.0203	12340
	St. Deviation	3.8	3.78	0.0195	0.0234	0.19	0.18	0.02	0.06	0.0027	0.0027	0.41	0.41	2.62	1.35	0.0191	0.0186	873
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	4.19	4.65	0.0385	0.0385	2.47	2.56	0.1	0.1	0.001495	0.0015	0.00155	0.00155	1.55	1.55	0.003095	0.003095	11300
	Maximum	12.5	12.5	0.0836	0.1	2.99	2.95	0.15	0.256	0.0075	0.0075	0.75	0.75	7.6	4.4	0.05	0.05	13500
	% of values undetected	40	40	40	40	0	0	40	40	100	100	100	100	60	60	100	100	
	# of values between MDL and PQL							2	2					1	1			
Newhalen																		
	07/21/04	80.1	12.5	0.1		7.95	7.23	1.2	0.322	0.0075	0.0075	0.75	0.75	31.4	24.3	0.05	0.05	
	10/20/04	176	29.4	0.0385	0.0385	6.17	6.75	2.43	0.706	0.0075	0.0075	0.75	0.75	21.9	22.1	0.0155	0.0155	4300
	03/29/05	154	13.2	0.0641	0.0574	9.42	9.03	2.35	0.282	0.00589	0.0015	0.003835	0.00384	35.3	38.8	0.00310	0.00310	3180
	07/16/05	220	15	0.0514	0.0368	9.55	9.48	2.36	0.348	0.0075	0.0075	0.00155	0.00155	37.1	33.9	0.00775	0.00775	3340
	10/08/05	4.5	2.9	0.0712	0.06	13	12.6	5.78	5.57	0.0075	0.0075	0.00155	0.00155	5	5	0.00775	0.00775	21700
	Mean	127	14.60	0.0650	0.0482	9.22	9.02	2.82	1.446	0.0072	0.0063	0.30	0.30	26.1	24.8	0.0168	0.0168	8130
	St. Deviation	85	9.52	0.0232	0.0122	2.52	2.31	1.73	2.312	0.0007	0.0027	0.41	0.41	13.2	13.0	0.0191	0.0191	9060
	# of values	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4
	Minimum	4.5	2.9	0.0385	0.0368	6.17	6.75	1.20	0.282	0.00589	0.0015	0.00155	0.00155	5	5	0.003095	0.003095	3180
	Maximum	220	29.4	0.1	0.06	13	12.6	5.78	5.570	0.0075	0.0075	0.75	0.75	37.1	38.8	0.05	0.05	21700
	% of values undetected		20	40	25					80	100	100	100	20	20	100	100	
	# of values between MDL and PQL									1								

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Chromium		Cobalt		Copper		Iron		Lead		Magnesium		Manganese		Mercury		Molybdenum		Nickel	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Iliamna (Weathered Inn)																					
	07/21/04	0.398	0.496	0.0155	0.0155	1.48	1.29	3.1	6.29	0.05	0.143	1140	1180	0.25	0.25	0.0001		0.155	0.155	0.295	0.427
	10/20/04	0.05	0.139	0.0155	0.05	2.13	2.1	3.1	3.1	0.14	0.162	1060	1060	0.25	0.25	0.031	0.031	0.327	0.337	0.613	0.291
	03/29/05	0.46	0.327	0.0143	0.0162	3.8	2.5	11	4	0.163	0.117	1430	1320	0.943	0.72	0.032	0.032	0.334	0.259	0.221	0.045
	07/12/05	0.705	0.685	0.038	0.0282	2.1	2.11	3.1		0.161	0.157	1410	1330	0.1	0.201	0.031	0.031	0.429	0.448	0.395	
	10/05/05	0.807	0.91	0.0316	0.0316	1.85		3.1	11.2	0.131	0.127	1300	1300	0.149	0.209	0.031	0.031	0.268	0.263	0.562	0.59
	Mean	0.484	0.511	0.0230	0.0283	2.3	2.0	4.7	6.1	0.129	0.141	1268	1238	0.34	0.33	0.0249	0.0311	0.303	0.292	0.417	0.338
	St. Deviation	0.296	0.301	0.0110	0.0141	0.9	0.5	3.5	3.6	0.046	0.019	164	116	0.34	0.22	0.0139	0.0003	0.101	0.108	0.168	0.231
	# of values	5	5	5	5	5	4	5	4	5	5	5	5	5	5	5	4	5	5	5	4
	Minimum	0.050	0.139	0.0143	0.0155	1.480	1.290	3.1	3.1	0.05	0.117	1060	1060	0.1	0.201	0.0001	0.031	0.155	0.155	0.221	0.045
	Maximum	0.807	0.91	0.038	0.05	3.800	2.500	11	11.2	0.163	0.162	1430	1330	0.943	0.72	0.032	0.032	0.429	0.448	0.613	0.59
	% of values undetected	20		40				80	40	20				60	40	100	80	20	20		25
	# of values between MDL and PQL		1	1	1				2	1	2			1				1	1		
Newhalen																					
	07/21/04	0.186	0.312	0.0361	0.0155	1.09	1.04	72.1	3.1	0.446	0.193	130		1.8	0.25	0.0005		0.711	0.756	0.234	
	10/20/04	0.05	0.05	0.05	0.0155	149	0.805	131	3.1	2.44	0.151	321	310	2.67	0.25	0.1	0.1	0.676	0.716	0.451	0.244
	03/29/05	0.152	0.036	0.059	0.04	2.2	1.1	122	4	0.654	0.264	142	105	2.61	0.126	0.032	0.032	1.06	0.897	0.13	
	07/16/05	0.357	0.368	0.0468	0.00155	168	7.5	174	10	11.7	0.626	156	98.2	3.35	0.1	0.031	0.031	0.898	0.872	0.749	0.383
	10/08/05	0.031	0.031	0.0606	0.059	4.6	3.43	11.6	8.33	0.149	0.117	3730	3590	4.13	3.97	0.031	0.031	2.76	2.71	1.08	1.09
	Mean	0.155	0.159	0.0505	0.0263	65	2.8	102	5.7	3.078	0.270	896	1026	2.91	0.94	0.0388	0.0484	1.221	1.190	0.529	0.572
	St. Deviation	0.131	0.166	0.0099	0.0229	86	2.8	62	3.2	4.902	0.206	1586	1712	0.87	1.70	0.0367	0.0344	0.874	0.853	0.389	0.454
	# of values	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	4	5	5	5	3
	Minimum	0.031	0.031	0.0361	0.00155	1.09	0.805	11.6	3.1	0.149	0.117	130	98.2	1.8	0.1	0.0005	0.031	0.676	0.716	0.13	0.244
	Maximum	0.357	0.368	0.0606	0.059	168	7.5	174	10	11.7	0.626	3730	3590	4.13	3.97	0.1	0.1	2.76	2.710	1.08	1.09
	% of values undetected	40	60	20	60				80					60	100	80					
	# of values between MDL and PQL	2		1				1	1		2							2	2		

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Potassium		Selenium		Silicon	Silver		Sodium		Thallium		Tin		Vanadium		Zinc	
		Total	Dissolved	Total	Dissolved	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Iliamna (Weathered Inn)																		
	07/21/04	189	198	0.155	0.155	7500	0.0031	0.0031	4600	4770	0.0125	0.0125	0.155	0.155	2.67	2.72	4.52	3.57
	10/20/04	187	195	0.155	0.155	7150	0.0031	0.0031	4660	4560	0.0125	0.0125	0.155	0.155	2.63	2.73	5.65	
	03/29/05	200	215	0.0544	0.0419	6930	0.001435	0.001435	5130	4910	0.0021	0.0021	0.0302	0.0302	2.88	2.61	11.7	8.53
	07/12/05	208	203	0.0775	0.216	7340	0.0031	0.0031	5730	5320	0.0031	0.0031	0.031	0.031	2.76	2.83	18.4	18.9
	10/05/05	211	210	0.193	0.0775	7870	0.0031		5350	5380	0.0031	0.0031	0.031	0.031	2.95	2.98	5.11	6.06
	Mean	199	204	0.127	0.129	7358	0.0028	0.0027	5094	4988	0.0067	0.0067	0.080	0.080	2.78	2.77	9.08	9.27
	St. Deviation	11	8	0.058	0.069	357	0.0007	0.0008	475	354	0.0053	0.0053	0.068	0.068	0.14	0.14	5.96	6.73
	# of values	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4
	Minimum	187	195	0.0544	0.0419	6930	0.001435	0.001435	4600	4560	0.0021	0.0021	0.0302	0.0302	2.63	2.61	4.52	3.57
	Maximum	211	215	0.193	0.216	7870	0.0031	0.0031	5730	5380	0.0125	0.0125	0.155	0.155	2.95	2.98	18.4	18.9
	% of values undetected			60	60		100	100			100	100	100	100				
	# of values between MDL and PQL			2	2													
Newhalen																		
	07/21/04	95.4		0.155	0.155	6990	0.0031	0.0031	23200	19900	0.0125	0.0125	0.155	0.155	2.29	2.48	0.75	0.75
	10/20/04	193	164	0.155	0.155	5880	0.128	0.0031	20800	20700	0.0125	0.0125	0.447	0.155	2.23	2.2	6.35	5.19
	03/29/05	125	110	0.0982	0.0931	6120	0.0179	0.005	20800	18700	0.0021	0.0021	0.0302	0.0302	2.9	2.48	1.68	1.24
	07/16/05	108	70.6	0.191	0.0775	6330	0.0031	0.0031	25800	24600	0.0031	0.0031	0.71	0.031	3	2.72	20.1	14.3
	10/08/05	1290	1260	0.0775	0.0775	7880	0.0031	0.0031	8300	8120	0.0031	0.0031	0.031	0.031	1.96	2.02	3.91	
	Mean	362	401	0.135	0.112	6640	0.0310	0.0035	19780	18404	0.0067	0.0067	0.275	0.080	2.48	2.38	6.56	5.37
	St. Deviation	520	574	0.046	0.040	807	0.0546	0.0008	6742	6159	0.0053	0.0053	0.297	0.068	0.45	0.27	7.87	6.28
	# of values	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
	Minimum	95.4	70.6	0.0775	0.0775	5880	0.0031	0.0031	8300	8120	0.0021	0.0021	0.0302	0.0302	1.96	2.02	0.75	0.75
	Maximum	1290	1260	0.191	0.155	7880	0.1280	0.0050	25800	24600	0.0125	0.0125	0.71	0.155	3	2.72	20.1	14.3
	% of values undetected			60	80		60	100			100	100	60	100			20	25
	# of values between MDL and PQL			1									1					

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Hardness	Conductivity	Total Dissolved Solids	Total Suspended Solids	Acidity	Alkalinity	Nitrate & Nitrite	Phosphorus	Chloride	Fluoride	Sulfate	Total Cyanide	WAD Cyanide	Thiocyanate	Ammonia
		mg/L	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Nondalton																
	07/30/04	56.7	170	120	0.4	1.57	77.5	0.33	0.0424	1.39	0.236	8.46	0.00125	0.00125	0.51	0.0155
	11/05/04	69.7	185	110	0.075	1.57	81.5	0.49	0.06	1.69	0.19	8.31	0.0027	0.0025	0.14	0.0155
	03/28/05	62.5	165	104	0.15	4.8	77	0.3	0.106	1.39	0.197	9.26	0.00125	0.00125	0.25	0.297
	07/11/05	76.1	165	103	0.075	3.38	80	0.297	0.108	1.28	0.15	7.7	0.0025	0.0025	0.29	0.0155
	10/08/05	7.77	120	63.8	0.3	0.785	51	0.206	0.023	2.05	0.282	5.65	0.00125	0.0038	0.22	0.0155
	Mean	54.55	161	100	0.2	2.42	73.4	0.325	0.068	1.56	0.211	7.88	0.00179	0.00226	0.28	0.0718
	St. Deviation	27.16	24	21	0.1	1.64	12.7	0.103	0.038	0.31	0.050	1.36	0.00074	0.00106	0.14	0.1259
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	7.77	120	63.8	0.075	0.785	51	0.206	0.023	1.28	0.15	5.65	0.00125	0.00125	0.14	0.0155
	Maximum	76.1	185	120	0.4	4.8	81.5	0.49	0.108	2.05	0.282	9.26	0.0027	0.0038	0.51	0.297
	% of values undetected				60	60							80	80		80
	# of values between MDL and PQL				2	2		2	2				1	1	5	
Pedro Bay																
	07/22/04	33.3	90	75	1	1.57	36.5	0.58	0.0155	1.53	0.55	4.39	0.00125	0.00125	0.065	0.0155
	10/16/04	30.6	95	63.8	0.7	1.57	36	0.155	0.0155	1.59	0.359	4.39	0.0061	0.003	0.065	0.05
	04/02/05	32.2	90	55	0.075	0.785	37.5	0.4	0.122	1.5	0.496	4.47	0.00125	0.00125	0.24	0.05
	07/13/05	39.3	90	57.5	0.5	0.785	37.5	0.391	0.106	1.37	0.444	4.12	0.00125	0.00125	0.68	0.0155
	10/07/05	36.1	95	32	0.075	0.785	37.3	0.472	0.024	1.4	0.452	4.29	0.00125	0.00125	0.3	0.0155
	Mean	34.30	92	56.7	0.5	1.10	37.0	0.400	0.0566	1.48	0.460	4.33	0.00222	0.00160	0.27	0.0293
	St. Deviation	3.44	3	15.8	0.4	0.43	0.7	0.156	0.0528	0.09	0.071	0.13	0.00217	0.00078	0.25	0.0189
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minimum	30.6	90	32.0	0.075	0.785	36	0.155	0.0155	1.37	0.359	4.12	0.00125	0.00125	0.065	0.0155
	Maximum	39.3	95	75	1	1.57	37.5	0.58	0.122	1.59	0.55	4.47	0.0061	0.003	0.68	0.05
	% of values undetected				40	100		20	40				80	80	40	100
	# of values between MDL and PQL							1						1	3	

Key:

Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 PQL.

If result was not detected at the lab MDL, the value shown is 1/2 MDL.

If flagged U or UJ, the value shown is 1/2 MDL.

Green Results = Estimate If result was flagged U or UJ during validation, the value shown is 1/2 MRL.

MDL = Method Detection Limit.

PQL = Practical Quantitation Limit.

NA = Not Applicable

WAD Cyanide = Weak Acid Dissociable Cyanide

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Aluminum		Antimony		Arsenic		Barium		Beryllium		Bismuth		Boron		Cadmium		Dissolved µg/L	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved		
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
Nondalton																			
	07/30/04	3.9	3.9	0.315		11.4	11.5	4.82	4.68	0.0075	0.0075	0.75	0.75	5.6	8.6	0.105	0.05	17400	
	11/05/04	12.5	12.5	0.103	0.0903	11.3	10.9	5.25	5.27	0.0228	0.0075	0.75	0.75	1.55	1.55	0.0155	0.0155	22700	
	03/28/05	1.56		0.0829	0.074	14.2	13.4	5.77	5.54	0.001495	0.00150	0.003835	0.00384	8.1	8.05	0.00310	0.00919	22800	
	07/11/05	4.53	2.5	0.0752	0.0806	13.4	12.8	5.47	5.48	0.0075	0.0075	0.00155	0.00155	5	5	0.00775	0.00775	22400	
	10/08/05	151	24.4	0.0334	0.041	8.88	8.86	1.86	0.35	0.0075	0.0075	0.00155	0.00155	34.2	34.3	0.00775	0.00775	2870	
	Mean	34.7	10.8	0.1219	0.0715	11.8	11.5	4.63	4.26	0.0094	0.0063	0.30	0.30	10.9	11.5	0.0278	0.0180	17634	
	St. Deviation	65.1	10.1	0.1109	0.0214	2.1	1.8	1.59	2.21	0.0080	0.0027	0.41	0.41	13.2	13.1	0.0434	0.0182	8560	
	# of values	5	4	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	
	Minimum	1.56	2.5	0.0334	0.041	8.88	8.86	1.86	0.35	0.001495	0.0015	0.00155	0.00155	1.55	1.55	0.003095	0.00775	2870	
	Maximum	151	24.4	0.315	0.0903	14.2	13.4	5.77	5.54	0.0228	0.0075	0.75	0.75	34.2	34.3	0.105	0.05	22800	
	% of values undetected	40	50							80	100	100	100	40	40	80	80		
	# of values between MDL and PQL			1	1					1				1	1		1		
Pedro Bay																			
	07/22/04	27.4	12.5	0.256	0.195	9.8	10	33.9	36.1	0.0075	0.0075	0.75	0.75	3.5	1.55	0.05	0.0155	12100	
	10/16/04	39.3	12.5	0.191	0.21	9.35	9.46	31	34.1	0.0075	0.0075	0.75	0.75	1.55	1.55	0.0155	0.0155	10800	
	04/02/05	16	5.78	0.213	0.202	9.43	9.78	31.6	34.2	0.001495	0.0015	0.003835	0.00384	3.82		0.00310	0.00310	13800	
	07/13/05	23.2	6.01	0.188	0.189	10.5	11.3	35.1	38.2	0.0075	0.0075	0.00155	0.00155	1.55	1.55	0.00775	0.00775	14300	
	10/07/05	18.8	4.91	0.164	0.154	9.99	9.62	31.1	29.9	0.0075	0.0075	0.00155	0.00155	5	5	0.00775	0.00775	12400	
	Mean	24.9	8.34	0.202	0.190	9.81	10.03	32.54	34.50	0.0063	0.0063	0.3014	0.3014	3.1	2.4	0.0168	0.0099	12680	
	St. Deviation	9.1	3.82	0.035	0.022	0.46	0.74	1.85	3.07	0.0027	0.0027	0.4095	0.4095	1.5	1.7	0.0191	0.0054	1399	
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	
	Minimum	16	4.91	0.164	0.154	9.35	9.46	31	29.9	0.001495	0.0015	0.00155	0.00155	1.55	1.55	0.003095	0.003095	10800	
	Maximum	39.3	12.5	0.256	0.21	10.5	11.3	35.1	38.2	0.0075	0.0075	0.75	0.75	5	5	0.05	0.0155	14300	
	% of values undetected		40							100	100	100	100	60	100	100	100		
	# of values between MDL and PQL			1	1									1					

Key:

Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 PQL.

If result was not detected at the lab MDL, the value shown is 1/2 MDL.

If flagged U or UJ, the value shown is 1/2 PQL.

Green Results = Estimate result reported by laboratory below reporting limit (PQL).

MDL = Method Detection Limit.

PQL = Practical Quantitation Limit.

NA = Not Applicable

WAD Cyanide = Weak Acid Dissociable Cyanide

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Chromium		Cobalt		Copper		Iron		Lead		Magnesium		Manganese		Mercury		Molybdenum		Nickel	
		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Nondalton																					
	07/30/04	0.158	0.12	0.0362	0.0155	7.45	6.42	3.1	3.1	0.385	0.396	3130	3170	0.734	0.636	0.0005		2.24	2.27	0.581	0.767
	11/05/04	0.05	0.05	0.05	0.05	31.8	4.26	3.1	3.1	1.33	0.197	3350	3230	0.25	0.25			2.96	2.82	0.613	0.673
	03/28/05	0.036	0.036	0.0256	0.0274	6.27	5.19	1.33	1.33	0.0906	0.0994	3540	3880	0.0852	0.116	0.0315	0.0315	3.72	3.21	0.12	0.192
	07/11/05	0.397	0.472	0.0364	0.0368	41.7	14.2	72.5	70.8	0.922	0.583	3920	3830	0.433	0.464	0.1	0.031	3.35	3.26	0.81	
	10/08/05	0.031	0.031	0.0762	0.0272	0.857	0.577	152	19.2	0.743	0.157	131	84.7	3.13	0.5	0.031	0.031	0.784	0.784	0.264	
	Mean	0.134	0.142	0.0449	0.0314	17.62	6.13	46.4	19.5	0.694	0.286	2814	2839	0.93	0.39	0.0408	0.0312	2.611	2.469	0.478	0.544
	St. Deviation	0.156	0.188	0.0195	0.0129	17.99	5.01	66.4	29.6	0.479	0.200	1528	1574	1.26	0.21	0.0421	0.0003	1.159	1.022	0.280	0.308
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	3	5	5	5	3
	Minimum	0.031	0.031	0.0256	0.0155	0.857	0.577	1.33	1.33	0.091	0.0994	131	84.7	0.0852	0.116	0.0005	0.031	0.784	0.784	0.12	0.192
	Maximum	0.397	0.472	0.0762	0.05	41.7	14.2	152	70.8	1.33	0.583	3920	3880	3.13	0.636	0.1	0.0315	3.72	3.260	0.81	0.767
	% of values undetected	60	60	20	40			60	60					20	20	80	60				
	# of values between MDL and PQL	1	1	2	1				1		1			1	1						
Pedro Bay																					
	07/22/04	0.336	0.2	0.0155	0.0155	1.18	1.1	13.1	3.1	0.05	0.157	909	776	0.777	0.25	0.0001		0.573	0.775	0.317	
	10/16/04	0.39	0.495	0.0155	0.0155	1.05	0.634	18.8	3.1	0.05	0.104	815	833	1.32	0.25			0.639	0.751	0.276	0.354
	04/02/05	0.258	0.187	0.00476	0.0208	1.58	0.885	12.2	4	0.251	0.136	842	886	0.71	0.226	0.032	0.032	0.432		0.045	
	07/13/05	0.504	0.528	0.022	0.004	1.66	1.08	59.7	39.6	0.05	0.106	1040	1060	1.11	0.42	0.031	0.031	0.751	0.756	0.388	
	10/07/05	0.031	0.031	0.0406	0.0338	1.43	0.57	25.1	3.1	0.05	0.05	947	905	0.989	0.311	0.031	0.031	0.585	0.579	0.567	0.634
	Mean	0.304	0.288	0.0197	0.0179	1.38	0.85	25.8	10.6	0.09	0.111	911	892	0.98	0.29	0.0234	0.0312	0.596	0.715	0.319	0.494
	St. Deviation	0.177	0.215	0.0132	0.0108	0.26	0.25	19.7	16.2	0.09	0.040	89	106	0.25	0.08	0.0155	0.0003	0.116	0.091	0.189	0.198
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	3	5	4	5	2
	Minimum	0.031	0.031	0.00476	0.004	1.05	0.570	12.2	3.1	0.05	0.05	815	776	0.71	0.226	0.0001	0.031	0.432	0.579	0.045	0.354
	Maximum	0.504	0.528	0.0406	0.0338	1.66	1.1	59.7	39.6	0.251	0.157	1040	1060	1.32	0.42	0.032	0.032	0.751	0.775	0.567	0.634
	% of values undetected	20	20	60	40				80	80	20			1	40	80	60			20	
	# of values between MDL and PQL		1		2			2			2							2	2		

Key:

Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 PQL.

If result was not detected at the lab MDL, the value shown is 1/2 MDL.

If flagged U or UJ, the value shown is 1/2 PQL.

Green Results = Estimate result reported by laboratory below reporting limit (PQL).

MDL = Method Detection Limit.

PQL = Practical Quantitation Limit.

NA = Not Applicable

WAD Cyanide = Weak Acid Dissociable Cyanide

2004-2005 Pebble Project Transportation Corridor Groundwater Sample Laboratory Results Summary

December 2008

Preliminary data. Do not cite or quote.

Sample Location ID	Sample Date	Potassium		Selenium		Silicon	Silver		Sodium		Thallium		Tin		Vanadium		Zinc	
		Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L	Total µg/L	Dissolved µg/L
Nondalton																		
	07/30/04	1100	1100	0.155	0.155	7850	0.0031	0.0031	7070	7170	0.0125	0.0125	0.155	0.155	1.41	1.37	0.939	1.44
	11/05/04	1280	1230	0.155	0.155	7120	0.0083	0.0063	8510	8330	0.0125	0.0125	0.482	0.155	1.31	1.29	1.65	1.59
	03/28/05	1360	1350	0.0367	0.0143	6800	0.001435	0.001435	8540	8520	0.0021	0.0021	0.0302	0.0302	1.55	1.4	14.4	1.88
	07/11/05	1370	1330	0.0775	0.0775	6760	0.0031	0.0031	8960	8740	0.0031	0.0031	0.395	0.031	1.66	1.24	4.53	
	10/08/05	86.5	67.7	0.0775	0.0775	7020	0.0031	0.0031	20500	23700	0.0031	0.0031	0.031	0.031	2.64	2.38	0.75	
	Mean	1039	1016	0.100	0.096	7110	0.0038	0.0034	10716	11292	0.0067	0.0067	0.219	0.080	1.71	1.54	4.45	1.64
	St. Deviation	544	539	0.053	0.060	440	0.0026	0.0018	5516	6963	0.0053	0.0053	0.209	0.068	0.53	0.48	5.76	0.22
	# of values	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3
	Minimum	86.5	67.7	0.0367	0.0143	6760	0.001435	0.001435	7070	7170	0.0021	0.0021	0.0302	0.0302	1.31	1.24	0.75	1.44
	Maximum	1370	1350	0.155	0.155	7850	0.0083	0.0063	20500	23700	0.0125	0.0125	0.482	0.155	2.64	2.38	14.4	1.9
	% of values undetected			80	100		80	80			100	100	60	100			20	
	# of values between MDL and PQL			1			1	1					1				1	1
Pedro Bay																		
	07/22/04	1180	1210	0.155	0.155	5560	0.0031	0.0031	2240	2180	0.0125	0.0125	0.155	0.155	4.57	4.94	2.77	2.18
	10/16/04	1020	980	0.155	0.155	5490	0.0031	0.0031	2060	2100	0.0125	0.0125	0.155	0.155	4.24	4.38	2.9	
	04/02/05	1090	1230	0.0406	0.0742	4990	0.001435	0.005	1810		0.0021	0.0021	0.464	0.0302	5.12	4.62	6.45	4
	07/13/05	1260	1340	0.0775	0.0775	5130	0.0031	0.0031	2500	2560	0.0031	0.0031	0.031	0.031	4.76	5.15	6.07	
	10/07/05	1250	1190	0.0775	0.0775	5730	0.0031	0.0031	2360	2270	0.0031	0.0031	0.031	0.031	5.08	5.06	5.51	
	Mean	1160	1190	0.101	0.108	5380	0.0028	0.0035	2194	2278	0.0067	0.0067	0.167	0.080	4.75	4.83	4.74	3.09
	St. Deviation	104	131	0.051	0.043	309	0.0007	0.0008	269	201	0.0053	0.0053	0.177	0.068	0.37	0.32	1.77	1.29
	# of values	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	2
	Minimum	1020	980	0.0406	0.0742	4990	0.001435	0.0031	1810	2100	0.0021	0.0021	0.031	0.0302	4.24	4.38	2.77	2.18
	Maximum	1260	1340	0.155	0.155	5730	0.0031	0.0050	2500	2560	0.0125	0.0125	0.464	0.155	5.12	5.15	6.5	4.0
	% of values undetected			80	80		100	100			100	100	80	100				
	# of values between MDL and PQL			1	1													

Key:

Bold Results = Parameter undetected by test, value shown is 1/2 MDL or 1/2 PQL.

If result was not detected at the lab MDL, the value shown is 1/2 MDL.

If flagged U or UJ, the value shown is 1/2 PQL.

Green Results = Estimate result reported by laboratory below reporting limit (PQL).

MDL = Method Detection Limit.

PQL = Practical Quantitation Limit.

NA = Not Applicable

WAD Cyanide = Weak Acid Dissociable Cyanide